

**REGION II RST 2 HEALTH AND SAFETY PLAN
EMERGENCY RESPONSE/REMEDIAL ASSESSMENT/REMOVAL ACTION
(Revised 16 March 2011)**

TDD No.: TO-0027-0063

Site Name: Unimatic Manufacturing Corporation

Site Address: 25 Sherwood Lane

City: Fairfield

County/State: Essex, New Jersey 07004

Driving Directions:

1. Head west toward **King Georges Rd/King Georges Post Road**
2. Turn right onto **King Georges Rd/King Georges Post Road**
3. Slight turn onto the ramp to **Garden State Pkwy N**
4. Keep left at the fork, follow signs for **Garden State Pkwy N** and merge onto **Garden State Pkwy N** (Partial toll road) **24.9 miles**
5. Take exit **153B** on the left to merge onto **NJ-3 W** toward **US-46 W**
6. Exit onto **US-46 W**
7. Take the **2 Bridges Rd** exit toward **Passaic Ave/The Caldwell/Lincoln Park**
8. Turn left onto **2 Bridges Rd**
9. Continue on **Passaic Ave**
10. Turn left onto **Sherwood Ln**

Estimated Travel Time: 52 minutes, Distance: 39.4 miles





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Historical/Current Site Information:

The Unimatic Manufacturing Corporation Site (the Site) is located in an industrial area at the eastern end of Sherwood Lane in Fairfield, New Jersey. The Site contains a building and a partially paved parking lot. The building was constructed in 1955 on undeveloped land. The Site has other commercial structures to the north, west, south, and east and there is a buried delivery pipeline for the Jersey City water system to the north of the property. The facility was originally

built to function as a tool shop and then became an aluminum die casting manufacturing business using polychlorinated biphenyl (PCB)-laden lubricants from 1955 to 2001.

GZA Geo-Environmental, (GZA) Inc. was retained to conduct initial investigation and remedial work on behalf of the Site owner. The initial investigation by GZA which began in May 2001 revealed the presence of a wastewater pipeline on the northeast area of the Site and filled materials in the unpaved portion of the Site north of the building. The soil sample collected from a test pit that was installed near the wastewater pipe contained total target PCBs at concentrations above the New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Cleanup Criteria (RDCSCC) of 0.49 milligrams per kilogram (mg/kg). The sample also contained antimony and copper, two targeted priority pollutant (PP) metals, at concentrations above the RDCSCC. Also the hand auger sample collected from the northern terminus of the wastewater pipe exceeded the NJDEP standard for total organics of 10,000 mg/kg. No other targeted compounds were detected above their RDCSSC in the sample or any of the other test pit soil samples.

During the sampling event that took place on February 7, 2005, GZA collected 11 wipe samples throughout the Site building. All wipe samples contained PCBs at concentrations above the U.S. Environmental Protection Agency (EPA) surface PCB cleanup standard of 0.01 milligrams per 100 square centimeters (mg/100cm²). The samples collected in the warehouse contained PCBs at concentrations at least one to three orders of magnitude greater than those collected in the other rooms throughout the Site Building. During this event GZA also collected 11 chip samples throughout the Site building. Eight out of the 11 chip samples collected contained PCBs. The samples collected at the warehouse had concentrations of PCBs at least one to two orders of magnitude greater than those collected in other rooms throughout the Site building (50 mg/kg).

After obtaining the results from the sampling event on February 7, 2005, GZA went back to the Site building on March 16, 2005 to delineate the surface contamination detected during the February 2005 sampling event. A total of 25 wipe samples were collected and all wipe samples contained PCBs at concentrations above the 0.01 mg/100cm² standard.

During the March 16, 2005 event GZA also delineated the chips samples collected that exceeded the concentrations limits of PCBs during the February 7, 2005 event. Ten chip samples were collected during the event. Four of the 10 chips collected exceeded the concentration limit of 50 mg/kg (one of the chip samples from the pressing room and three chip samples from the warehouse). The three chip samples from the warehouse exceeded the PCB concentration limit at least one to two orders of magnitude compared to the other rooms in the Site building.

In January 2007, a request for a Revised Remedial Investigation Workplan (RRIW) was requested from the Site owner for an ongoing issue with contaminated soil. PCB contaminated soil exceeded the Soil Remediation Standards and as of 2009 was still present in soils below the water table and in groundwater on the property.

GZA has been conducting remedial work on the Site and submitting RIR/RAW to the NJDEP on behalf of the Site owner ever since. PCB contamination of soil and water are well documented on the Site and contamination has extended off site.

In February 2011, with the submission of the RIR/RAW documentation, GZA on behalf of Unimatic also submitted an "Opt In" form to move this case to into the License Site Remediation (LSRP) program at the NJDEP.

In September 2012, Weston Solutions, Inc., Removal Support Team 2 (RST 2) mobilized to the Site to conduct soil sampling activities as part of the EPA Removal Assessment of the Site. As part of the sampling event, RST 2 collected a total of 34 soil samples, including one field duplicate, from exterior locations throughout the Site. Analytical results of the soil samples indicated the presence of PCBs ranging from non-detect to 56,000 micrograms per kilogram (ug/kg).

In October 2012, the second phase of the Removal Assessment of the Site was conducted. On-site activities included the collection of samples from several media types including wipe, air, microvac and material samples. Based on this event, and all other previous investigations on site, elevated levels of PCBs have been detected throughout the facility including the floors, walls, equipment and ambient air. As a result, the current occupants, Framework, Inc. (Framework), will be vacating the premises and moving its operations to a new location. In order to ensure the PCB contamination does not spread beyond the area of concern and to the exterior of the building, wipe sampling of the facility's equipment and inventory (EI) is proposed.

RST 2 Scope of Work:

As part of the third phase of the EPA Removal Assessment, RST 2 is tasked with providing two members for the collection of approximately 70 wipe samples from EI surfaces within the facility. At the direction of the EPA, Framework assessed EI within the facility and identified all items they would immediately need at their new location as "priority". Following a walk-through with EPA and Framework to review the "priority" items and the sampling plan, RST 2 began a survey, which included pictures of all "priority" items and the identification of two to five sample locations. Items were classified by room name and type (Bin, Cabinet, Cart/Dolly, Inventory, Machine, Rack, Tool or Workspace) and each of the proposed sample locations were photographed and assigned an identification number. Based on the inventory, approximately 70 wipe samples will be taken within the facility and submitted for target compound list (TCL) PCB analysis.

Three (3) S.M.A.R.T. Health and Safety Goals for the Project (Simple, Measurable, Actionable, Reasonable, & Timely):

1. Safe navigation (no accidents) while in vehicle during mobilization to the Site.
2. Safe sampling procedures used during sample collection activities.
3. Ensure personal protection equipment (PPE) is properly worn and utilized during sampling activities.

Incident Type:

- ☐ Emergency Response
- ☒ Removal Assessment
- ☐ Removal Action
- ☐ Residential Sampling/Investigation
- ☐ PRP Oversight
- ☐ Other

Location Class:

- ☒ Industrial
- ☒ Commercial
- ☒ Urban/Residential
- ☐ Rural

U.S. EPA OSC: David Rosoff
Original HASP: Yes or No: Yes
Lead RST 2: Peter Lisichenko

Date of Initial Site Activities: June 2013
Site Health & Safety Coordinator: Peter Lisichenko
Site Health & Safety Alternate: Not Applicable

Response Activities/Dates of Response (fill in as applicable)

Emergency Response:

- ☐ Perimeter Recon -
- ☐ Site Entry -
- ☐ Visual Documentation -
- ☐ Multi-Media Sampling -
- ☐ Decontamination -

Removal Assessment:

- ☒ Perimeter Recon - June 2013
- ☒ Site Entry - June 2013
- ☒ Visual Documentation - June 2013
- ☒ Multi-Media Sampling - June 2013
- ☒ Decontamination - June 2013

Removal Action:

- ☐ Perimeter Recon -
- ☐ Site Entry -
- ☐ Visual Documentation -
- ☐ Multi-Media Sampling -
- ☐ Decontamination -

Physical Safety Hazards to Personnel:

<input checked="" type="checkbox"/>	Inclement Weather – Attach FLD02	<input type="checkbox"/>	Heat – Attach FLD05	<input type="checkbox"/>	Cold – Attach FLD06
<input type="checkbox"/>	Confined Space – Attach FLD08	<input type="checkbox"/>	Industrial Trucks – Attach FLD09	<input type="checkbox"/>	Manual Lifting – Attach FLD10
<input type="checkbox"/>	Terrain – Attach FLD11	<input type="checkbox"/>	Structural Integrity – Attach FLD13	<input type="checkbox"/>	Site Security – Attach FLD14
<input type="checkbox"/>	Pressurized Containers, Systems – Attach FLD16	<input type="checkbox"/>	Use of Boats – Attach FLD18	<input type="checkbox"/>	Waterways – Attach FLD19
<input type="checkbox"/>	Explosives – Attach FLD21	<input type="checkbox"/>	Heavy Equipment – Attach FLD22	<input type="checkbox"/>	Aerial Lifts and Manlifts – Attach FLD24
<input type="checkbox"/>	Elevated Surfaces and Fall Protection – Attach FLD25	<input checked="" type="checkbox"/>	Ladders – Attach FLD26	<input type="checkbox"/>	Excavations/Trenching – Attach FLD28
<input type="checkbox"/>	Fire Prevention – Attach FLD31	<input type="checkbox"/>	Demolition – Attach FLD33	<input type="checkbox"/>	Underground/Overhead Utilities – Attach FLD34
<input type="checkbox"/>	Hand and Power Tools – Attach FLD38	<input type="checkbox"/>	Illumination – Attach FLD39	<input type="checkbox"/>	Storage Tanks – Attach FLD40
<input type="checkbox"/>	Lead Exposure – Attach FLD46	<input checked="" type="checkbox"/>	Sample Storage – Attach FLD49	<input type="checkbox"/>	Cadmium Exposure – Attach FLD50
<input type="checkbox"/>	Asbestos Exposure – Attach FLD52	<input type="checkbox"/>	Hexavalent Chromium Exposure – Attach FLD 53	<input type="checkbox"/>	Benzene Exposure – Attach FLD 54
<input type="checkbox"/>	Drilling Safety – Attach FLD56	<input type="checkbox"/>	Drum Handling – Attach FLD58	<input type="checkbox"/>	Gasoline Contaminant Exposure – Attach FLD61
<input type="checkbox"/>	Noise – Attach CECHSP, Section 7	<input checked="" type="checkbox"/>	Walking/Working Surfaces	<input type="checkbox"/>	Oxygen Deficiency
<input type="checkbox"/>	Unknowns in Tanks or Drums	<input type="checkbox"/>	Nonionizing Radiation	<input type="checkbox"/>	Ionizing Radiation

Biological Hazards to Personnel:

- | | |
|---|---|
| <input type="checkbox"/> Infectious/Medical/Hospital Waste – Attach FLD 44 and 45 | <input type="checkbox"/> Non-domesticated Animals – Attach RST 2 FLD43A |
| <input type="checkbox"/> Insects – Attach RST 2 FLD 43B | <input type="checkbox"/> Poisonous Plants/Vegetation – Attach RST 2 FLD 43D |
| <input type="checkbox"/> Raw Sewage | <input type="checkbox"/> Bloodborne Pathogens – Attach FLD 44 and 45 |

Training Requirements:

- | | |
|---|--|
| <input checked="" type="checkbox"/> 40-Hour HAZWOPER Training with three days supervised experience | <input type="checkbox"/> 8-Hour Management or Supervisor Training in addition to basic training course |
| <input checked="" type="checkbox"/> 8-Hour Annual Refresher Health and Safety Training | <input type="checkbox"/> Site Specific Health and Safety Training |
| <input type="checkbox"/> DOT (CMV Training - ERV in Use) | <input type="checkbox"/> Bio-Medical Collection and Response |

Medical Surveillance Requirements:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Baseline initial physical examination with physician certification | <input checked="" type="checkbox"/> Annual medical examination with physician certification |
| <input type="checkbox"/> Site-specific medical monitoring protocol (Radiation, Heavy Metals) | <input type="checkbox"/> Asbestos worker medical protocol |

Vehicle Use Assessment and Selection:

Driving is one of the most hazardous and frequent activities for Weston Employees. As such, Weston Employees are required to adhere to established safe operating practices in order to maintain their eligibility to drive Weston owned, leased, or rented vehicles. Every person riding in a Weston vehicle, including passengers must maintain a commitment for a safe journey. This means being attentive while in the vehicle and helping the driver to notice hazards ahead of and around the vehicle and ensure that their presence does not distract the driver from safely operating the vehicle.

A high percentage of vehicle accidents occur when operating in reverse. Anytime a vehicle is operated in reverse, e.g., backing out of a parking area, if there are passengers, at least one of them are to assist the driver by acting as a guide person during the reverse movement or during other vehicle operation where it would be prudent to have a guide person(s) participate in the vehicle movement. When practical, the preferred parking method would be to back into the parking area.

At a minimum, each Weston Driver must:

- Possess a current, valid drivers' license
- Current Commercial Motor Vehicle (CMV) card when operating the Emergency Response Vehicle
- Obey posted speed limits and traffic laws
- Wear seat belts at all times while the vehicle is in operation
- Conduct a 360 degree inspection around the vehicle before attempting to drive the vehicle
- Report accidents / incidents immediately and complete a Notice of Incident (NOI)
- Keep vehicles on approved roadways (4WD doesn't guarantee mobility on unapproved surfaces)

All Region II RST 2 personnel are experienced and qualified to drive RST 2 fleet vehicles (Tahoe, Suburbans, Minivan/Cargo Van, and Emergency Response Vehicle). However, in the event that vehicle rental is required, each person must take the time to familiarize themselves with that particular vehicle. This familiarization includes adjustment of the dashboard knobs/controls, mirrors, steering wheel, seats, and a 360 degree external inspection of the vehicle.

1. The following vehicles are anticipated to be used on this project:

- | | |
|--|--|
| <input type="checkbox"/> Car | <input type="checkbox"/> Pickup Truck |
| <input checked="" type="checkbox"/> Intermediate/Standard SUV
(e.g. Chevy Trailblazer, Chevy Tahoe, Ford Explorer, Ford Escape) | <input type="checkbox"/> Full Size SUV (e.g. Chevy Suburban, Ford Expedition, GMC Yukon) |
| <input type="checkbox"/> Minivan/Cargo Van (e.g. Chevy Uplander, Chevy Express Van) | <input type="checkbox"/> Box Truck (Size: approx. 12 feet) |
| <input type="checkbox"/> Emergency Response Vehicle (ERV) | <input type="checkbox"/> Other _____ |

2. Are there any on-site considerations that should be noted:

- | | | | |
|--|---|--|---------------------------------------|
| <input checked="" type="checkbox"/> Working/Driving Surfaces | <input checked="" type="checkbox"/> Debris | <input type="checkbox"/> Overhead Clearance | <input type="checkbox"/> Obstructions |
| <input checked="" type="checkbox"/> Tire Puncture Hazards | <input type="checkbox"/> Vegetation | <input checked="" type="checkbox"/> Terrain | <input type="checkbox"/> Parking |
| <input type="checkbox"/> Congestion | <input checked="" type="checkbox"/> Site Entry/Exit Hazards | <input checked="" type="checkbox"/> Local Traffic Volume | <input type="checkbox"/> Security |
| Heavy Equipment | <input type="checkbox"/> Time/Length of Work Day | <input type="checkbox"/> Other: | |

Do any of the considerations above require further explanation: Will be heavy traffic during long work day commutes. Extra precaution should be used and use of spotters.

3. Was the WESTON Environmental Risk Management Tool completed in EHS? Yes

Was an Environmental Compliance Plan required? No

4. Are there any seasonal considerations that should be noted (e.g., Anticipated Snowy Conditions): No

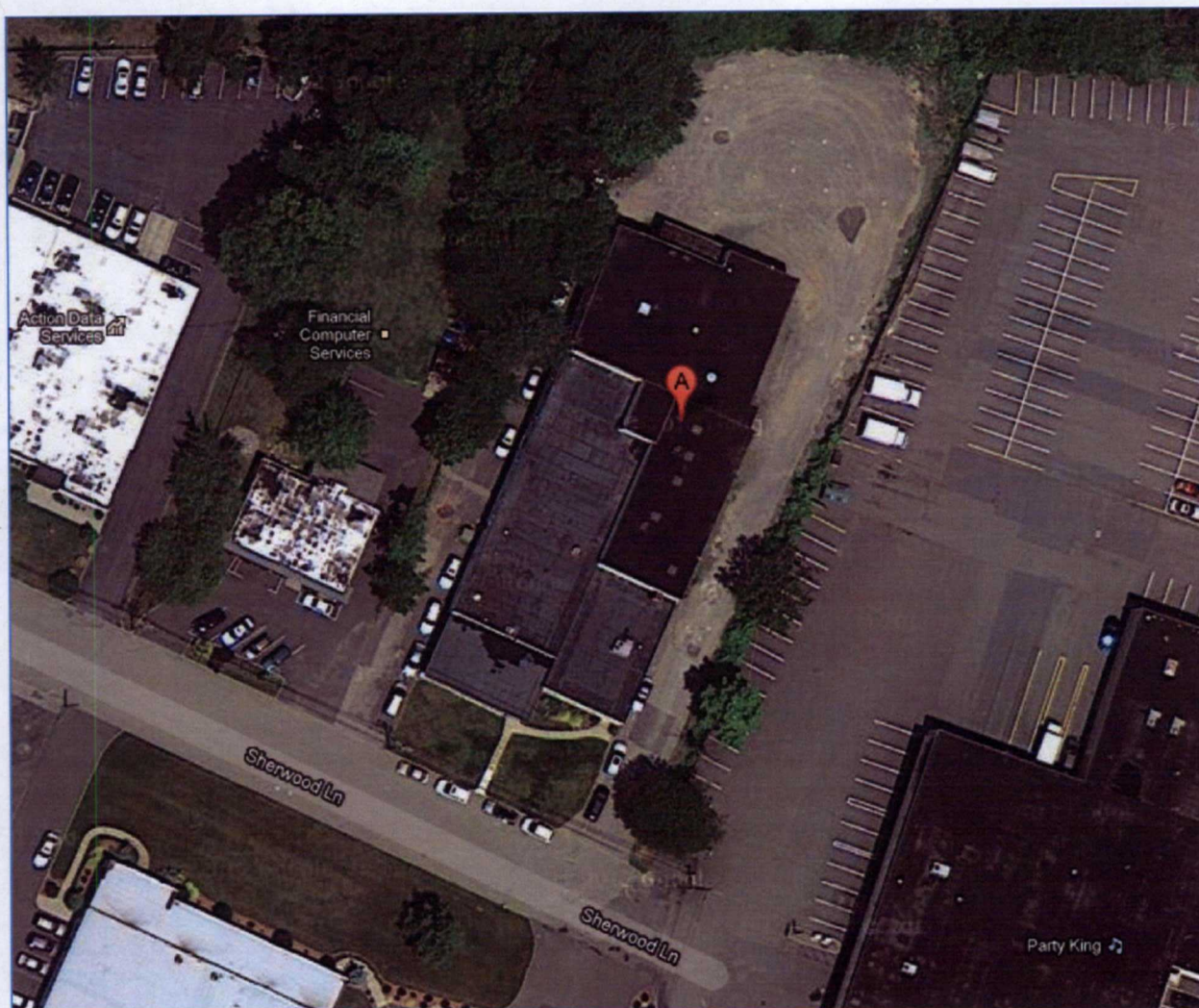
5. Is a Traffic Control Plan required? ☐ Yes ☒ No

Chemical Hazards to Personnel

Physical Parameters	<u>Chemical Contaminant</u> Polychlorinated biphenyls (PCBs – Aroclor 1254)	<u>Chemical Contaminant</u> Hexane
	Exposure Limits / IDLH Level Physical Form (Solid/Liquid/Gas) Color	Exposure Limits / IDLH Level Physical Form (Solid/Liquid/Gas) Color
	_____ ppm <u>0.5</u> mg/m ³ PEL _____ ppm <u>0.001</u> mg/m ³ TLV / REL _____ ppm <u>5</u> mg/m ³ IDLH _____ Solid <u>Viscous, oily</u> Liquid _____ Gas <u>Colorless to pale yellow</u> Color	<u>500</u> ppm _____ mg/m ³ PEL <u>50</u> ppm _____ mg/m ³ TLV / REL <u>1100</u> ppm _____ mg/m ³ IDLH _____ Solid <u>clear liquid</u> Liquid _____ Gas <u>Colorless</u> Color
Odor	Mild hydrocarbon odor	Light Odor
Flash Point Flammable Limits	<u>N/A</u> Degrees F or C <u>N/A</u> % UEL <u>N/A</u> % LEL	<u>-23</u> Degrees F or C <u>7.7</u> % UEL <u>1.2</u> % LEL
Specific Gravity	<u>1.38</u> Water = 1	<u>0.66</u> Water = 1
Solubility	Insoluble in water	Soluble in Water
Incompatible Materials	Strong oxidizers	N/A
Routes of Exposure	<u>x</u> Inh <u>x</u> Abs <u>x</u> Con <u>x</u> Ing	<u>x</u> Inh <u>x</u> Abs <u>x</u> Con <u>x</u> Ing
Symptoms of Acute Exposure	Irritation eyes, chloracne; liver damage; reproductive effects [potential occupational carcinogen]	Irritation eyes, lightheadedness, nausea, headache, and blurred vision [potential occupational carcinogen]
First Aid Treatment	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
Ionization Potential	<u>N/A</u> eV	<u>N/A</u> eV
Instruments for Detection	____ PID w/ _____ Probe ____ FID _____ CGI _____ RAD _____ Det Tube _____ NIOSH 5503 Other _____ Lumex	____ PID w/ _____ Probe ____ FID _____ CGI _____ RAD _____ Det Tube _____ Other _____ Lumex

Control Measures

Site Map with Work Zones: To be determined on-site.



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Exclusion Zone - the area where contamination is either known or expected to occur and the greatest potential for exposure exists. The outer boundary of the Exclusion Zone, called the Hotline, separates the area of contamination from the rest of the site.

Contamination Reduction Zone (CRZ) - the area in which decontamination procedures take place. The purpose of the CRZ is to reduce the possibility that the Support Zone will become contaminated or affected by the site hazards.

Support Zone - the uncontaminated area where workers are unlikely to be exposed to hazardous substances or dangerous conditions. The Support Zone is the appropriate location for the command post, medical station, equipment and supply center, field laboratory, and any other administrative or support functions that are necessary to keep site operations running efficiently.

Communications:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Buddy System | <input type="checkbox"/> Radio (cell phone) |
| <input type="checkbox"/> Air Horn for Emergencies | <input checked="" type="checkbox"/> Hand Signals/Visual Contact |

Personnel Decontamination Procedures:

- ☐ None
- ☐ Wet Decontamination (procedures as follows)
- ☒ Dry Decontamination (procedures as follows)
- Don gloves
 - Hand wipe/brush of sediment
 - Place used PPE in poly trash bag for disposal
 - Remove gloves

Equipment Decontamination Procedures:

- ☒ None
- ☐ Wet Decontamination (procedures as follows)
- Alconox wash and tap water rinse to remove gross contamination
 - Di water rinse
 - Air dry
- ☐ Dry Decontamination (procedures as follows)

Adequacy of decontamination determined by: RST 2 On-Site Health and Safety Officer.

Personal Protective Equipment

TASK TO BE PERFORMED	ANTICIPATED LEVEL OF PROTECTION	TYPE OF CHEMICAL PROTECTIVE COVERALL	INNER GLOVE / OUTER GLOVE / BOOT COVER	APR CARTRIDGE TYPE or SCBA
Wipe material Sampling	Level D	None	Blue Nitrile/Green Nitrile/	None
Site Documentation	Level D	None	Blue Nitrile/Green Nitrile/	None

Hazard Task Analysis

RISK LEVEL (High, Medium, Low)	HAZARD	RECOGNITION/ SYMPTOMS	MITIGATION	LEVEL OF PROTECTION
Medium	Slips, Trips, Falls and Uneven Walking Surfaces	Exterior walking surfaces clear of debris, fallen trees, overgrown vegetation and uneven surfaces that may increase the potential for an incident.	Maintain walking paths in cleared areas.	Level D
Medium	Particles and/or dust, eyes and breathing	Activities conducted using mallet and chisel	Proper PPE: goggles and mask.	Level D

Frequency and Types of Air Monitoring:

☐ Continuous
 ☒ Routine - As requested by ☐ Periodic - OSC or deemed necessary

DIRECT READING INSTRUMENTS	MultiRAE CGI / O ₂ / H ₂ S / CL ₂ / CO / PID	Ludlum 19 Micro-R Meter / Ludlum Model 3 Survey Meter	MicroFID or TVA-1000	Drager Chemical Detector Tube	Particulate Monitors
EQUIPMENT ID NUMBER	TBD	N/A	N/A	N/A	N/A
CALIBRATION DATE		N/A		N/A	N/A
RST 2 PERSONNEL		N/A		N/A	N/A
ACTION LEVEL	≥ 10 - 20% LEL (Confined Space / non- Confined Space) ≤ 19.5%, O ₂ Deficient ≥ 23% O ₂ - Enriched H ₂ S – PEL: 20 ppm IDLH: 100 ppm Cl ₂ – PEL: 1 ppm IDLH: 10 ppm	<3X Background Exercise Caution; ≥ 1 mR/HR – Exit Area, Establish Perimeter, Contact RST 2 HSO	Unknowns: 1 - 5 Units - "Level C" 5-500 Units- "Level B"	PEL / TLV / IDLH: Compare with Drager Tube	TBD

Emergency Telephone Numbers

Emergency Contact	Location / Address	Telephone Number	Notified
Hospital	Mountainside Hospital 1 Bay Avenue Montclair, NJ 07042	(973) 429-6000	N
Ambulance	911		N
Police	230 Fairfield Road Fairfield, NJ 07004	(973) 227-1400	N
Fire Department	230 Fairfield Road Fairfield, NJ 07004	(973) 227-1400	N

Chemical Trauma Capability? ☒ Yes ☐ No

If no, closest backup: _____ Phone: _____

Directions to Hospital (Attach Color Map Following This Page):

1. Head **northwest** on **Sherwood Ln** toward **Passaic Ave**
2. Turn left onto **Passaic Ave**
3. Turn left onto **Bloomfield Ave/Rt. 506**
4. Turn left onto **Prospect Ave**
5. Take the 1st right onto **Claremont Ave**
6. Continue onto **Bay Ave**

Destination will be on the left



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Route verified by: _____ Date: __/__/__

Additional Emergency Telephone Contacts

WESTON Medical Emergency Service Dr. Peter Greaney, Medical Director WorkCare 300 South Harbor Blvd, Suite 600 Anaheim, California 92805	800-455-6155 Regular Business Hours (9AM to 7:30PM) Dial 0 or Ext. 175 for Michelle Bui to request the on-call clinician. 800-455-6155 After Hours (Weekdays 7:31PM to 8:59AM, Weekends, Holidays) Dial 3 to reach the after-hours answering service. Request that the service connect you with the on-call clinician or the on-call clinician will return your call within 30 minutes.
Chemtrec	800-424-9300
ATSDR	404-639-0615
ATF (explosives information)	800-424-9555
National Response Center	800-424-8802
National Poison Control Center	800-764-7661
Chemtel	800-255-3924
DOT	800-424-8802
CDC	800-232-0124

Pre-Response Approval

HASP prepared by: Maria Markoudakis

Date: 5/29/2013

Pre-Response/Entry Approval by: Peter Lisichenko

Date: 5/29/2013

Tasks Conducted	Level of Protection/Specific PPE Used
Wipe Material Sampling	Level D
Site Documentation	Level D

Hazardous Waste Site and Environmental Sampling Activities

Off Site: ☐ Yes ☒ No

On Site: ☒ Yes ☐ No

Describe types of samples and methods used to obtain samples:

RST 2 is tasked with the collection of 70 wipe samples. As the current occupants of the facility, Framework, begin to vacate the premises due to elevated levels of PCBs, wipe sampling of equipment and inventory items to be moved to a new location will be conducted. At the direction of EPA, Framework assessed the equipment and inventory and identified those items that they determined as "priority". The "priority" items were identified with a manila tag and RST 2 surveyed the facility by photographing and identifying all necessary wipe sample locations.

Wipe samples will be submitted to a Contract Laboratory Program (CLP) for TCL PCB analysis. No duplicate, MS/MSD or rinsate blanks will be collected.

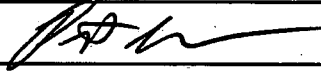

The following sampling design is based on information currently available and may be modified on site based on other acquired information:

Wipe sampling activities will be conducted in accordance with guidelines outlined in EPA/ERT Soil Sampling SOP #2011. Wipe samples will be collected at up to 70 locations within the facility. Wipe samples will be collected using gauze, saturated with hexane, and 100cm² templates on designated surfaces. The samples will be placed in glass amber unpreserved VOA vials.

Was laboratory notified of potential hazard level of samples? ☒ Yes ☐ No

Disclaimer: This Health and Safety Plan (HASP) was prepared for work to be conducted under RST 2 Contract EP-W-06-072. Use of this HASP by WESTON and its subcontractors is intended to fulfill the OSHA requirements found in 29 CFR 1910.120. Items not specifically covered in this HASP are included by reference to 29 CFR 1910 and 1926.

The signatures below indicate that the individuals have read and understood this Health and Safety Plan.

PRINTED NAME	SIGNATURE	AFFILIATION	DATE
PETER LISICHENKO		WESTON RST 2	6/3/13
Bernard Nwosu		WESTON RST 2	6/3/13

Post-Response Approval

Final Submission of HASP by:		Date:
Post Response Approval by:		Date:
RST 2 HSO Review by:		Date:

ATTACHMENT A:
NIOSH POCKET GUIDES



Centers for Disease Control and Prevention

CDC 24/7: Saving Lives. Protecting People.™

Search the Pocket Guide

SEARCH

Enter search terms separated by spaces.

n-Hexane

Synonyms & Trade Names Hexane, Hexyl hydride, normal-Hexane

CAS No. 110-54-3

RTECS No. MN9275000
([/niosh-rtecs/MN8D8678.html](http://niosh-rtecs/MN8D8678.html))DOT ID & Guide 1208 128
(<http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=128>) ☞
(<http://www.cdc.gov/Other/disclaimer.html>)Formula $\text{CH}_3[\text{CH}_2]_4\text{CH}_3$ Conversion 1 ppm = 3.53
mg/m³IDLH 1100 ppm [10%LEL]
See: 110543 ([/niosh/idlh/110543.html](http://niosh/idlh/110543.html))

Exposure Limits

NIOSH REL : TWA 50 ppm (180 mg/m³)OSHA PEL [†] (nengapdxg.html): TWA 500 ppm (1800 mg/m³)

Measurement Methods

NIOSH 1500 ☞ ([/niosh/docs/2003-154/pdfs/1500.pdf](http://niosh/docs/2003-154/pdfs/1500.pdf)), **3800** ☞ ([/niosh/docs/2003-154/pdfs/3800.pdf](http://niosh/docs/2003-154/pdfs/3800.pdf));**OSHA 7** (<http://www.osha.gov/dts/sltc/methods/organic/org001/org001.html>) ☞
(<http://www.cdc.gov/Other/disclaimer.html>)See: **NMAM** ([/niosh/docs/2003-154/](http://niosh/docs/2003-154/)) or
OSHA Methods (<http://www.osha.gov/dts/sltc/methods/index.html>) ☞
(<http://www.cdc.gov/Other/disclaimer.html>)

Physical Description Colorless liquid with a gasoline-like odor.

MW: 86.2

BP: 156°F

FRZ:
-219°FSol:
0.002%

VP: 124 mmHg

IP: 10.18 eV

Sp.Gr: 0.66

Fl.P: -7°F

UEL: 7.5%

LEL: 1.1%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities Strong oxidizers

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weak; dermatitis; dizziness; chemical pneumonitis (aspiration liquid)

Target Organs Eyes, skin, respiratory system, central nervous system, peripheral nervous system

Personal Protection/Sanitation ([See protection codes \(protect.html\)](#))

Skin: Prevent skin contact

Eyes: Prevent eye contact

Wash skin: When contaminated

Remove: When wet (flammable)

Change: No recommendation

First Aid ([See procedures \(firstaid.html\)](#))

Eye: Irrigate immediately

Skin: Soap wash immediately

Breathing: Respiratory support

Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 500 ppm:

(APF = 10) Any supplied-air respirator*

Up to 1100 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister

Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection \(pgintrod.html#mustread\)](#)

See also: [INTRODUCTION \(/niosh/npg/pgintrod.html\)](#) See ICSC CARD: [0279 \(/niosh/ipcsneng/nengo279.html\)](#) See MEDICAL TESTS: [0114 \(/niosh/docs/2005-110/nmedo114.html\)](#)

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Content source: [National Institute for Occupational Safety and Health \(NIOSH\)](#) Education and Information Division

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polychlorinated biphenyls

SEARCH

Enter search terms separated by spaces.

Chlorodiphenyl (54% chlorine)

Synonyms & Trade Names Aroclor® 1254, PCB, Polychlorinated biphenyl

CAS No. 11097-69-1

RTECS No. TQ1360000
([/niosh-rtecs/TQ14Co8o.html](http://www.niosh-rtecs.org/TQ14Co8o.html))DOT ID & Guide 2315 171
(<http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=171>) ☞
(<http://www.cdc.gov/Other/disclaimer.html>)Formula $C_6H_3Cl_2C_6H_2Cl_3$
(approx)

Conversion

IDLH Ca [5 mg/m³]
See: IDLH INDEX ([/idlh/intridl4.html](http://www.cdc.gov/Other/IDLH/index.html))

Exposure Limits

NIOSH REL *: Ca TWA 0.001 mg/m³ See Appendix A
([nengapdxa.html](http://www.cdc.gov/niosh/docs/2003-154/pdfs/5503.pdf)) [*Note: The REL also applies to other PCBs.]OSHA PEL : TWA 0.5 mg/m³ [skin]

Measurement Methods

NIOSH 5503 ☞ ([/niosh/docs/2003-154/pdfs/5503.pdf](http://www.niosh/docs/2003-154/pdfs/5503.pdf)) ;
OSHA PV2088 (<http://www.osha.gov/dts/sltc/methods/partial/t-pv2088-01-8812-ch/t-pv2088-01-8812-ch.html>) ☞
(<http://www.cdc.gov/Other/disclaimer.html>)
See: NMAM ([/niosh/docs/2003-154/](http://www.niosh/docs/2003-154/))
or OSHA Methods
(<http://www.osha.gov/dts/sltc/methods/index.html>) ☞ (<http://www.cdc.gov/Other/disclaimer.html>)

Physical Description Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor.

MW: 326
(approx)

BP: 689-734°F

FRZ: 50°F

Sol: Insoluble

VP: 0.00006 mmHg

IP: ?

Sp.Gr(77°F): 1.38

FLP: NA

UEL: NA

LEL: NA

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.

Incompatibilities & Reactivities Strong oxidizers	
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact	
Symptoms irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	
Target Organs Skin, eyes, liver, reproductive system	
Cancer Site [in animals: tumors of the pituitary gland & liver, leukemia]	
Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter. Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters. Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection (pgintrod.html#mustread)	
See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0939 (/niosh/ipcsneng/nengo939.html) See MEDICAL TESTS: 0176 (/niosh/docs/2005-110/nmedo176.html)	

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ATTACHMENT B:

WESTON FLDS

FLD 02 INCLEMENT WEATHER

Hot weather (ambient temperatures over 70°F), cold weather (ambient temperatures below 40°F), rain, snow, ice, and lightning are examples of inclement weather that may be hazardous or add risk to work activities. Extremes of heat, cold, and humidity, as well as rain, snow, and ice, can adversely affect monitoring instrument response and reliability, respiratory protection performance, and chemical protective clothing materials.

RELATED FLDs AND OP

FLD 05 – Heat Stress Prevention and Monitoring

FLD 06 – Cold Stress

OP 05-03-008 – Inclement Weather & Business Disruption Policy

PROCEDURE

The potential for exacerbating the impact of physical hazards must be considered for tasks that expose personnel to inclement weather. Risk assessment and hazards analysis should be accomplished during the planning stages of a project for the most likely inclement weather conditions that may be encountered, i.e., rain and lightning in late spring, summer, and early fall, or lightning prone areas; cold, snow, and ice in winter. The Field Safety Officer (FSO) must determine the proper safety procedures and recommend them to the site manager. Each worker must evaluate the risk associated with his/her work and be actively alert to these hazards. Managers and workers must be familiar with the requirements of FLD 05 and FLD 06.

A pre-site activity risk assessment must be completed when inclement weather occurs. Weather conditions that affect instruments and personal protective equipment (PPE) function must be conveyed to site workers who should monitor function and integrity of PPE and be alert to changing weather conditions. A decision must be made on the proper safety procedures to use if work must continue, or to stop work if the risk is too great. The appropriate Safety Professional must be notified of all instances of the need to stop work for safety reasons, including inclement weather.

Heat

Hot, dry weather increases risk of soil drying, erosion, and dust dispersion, which may present or increase risk of exposure and environmental impact from toxic hazards. Hot weather will increase pressure on closed containers and the rate of volatilization, thereby potentially increasing the risk of exposure to toxic, flammable, or explosive atmospheres.

Prevention and Protective Measures

Employees must be protected from airborne contaminants using engineering controls such as wetting dry soil to prevent particle dispersion, and providing local ventilation to reduce volatile air contaminants to safe levels, or if engineering controls are infeasible, using prescribed PPE. Wind shifts and velocity should be measured where change may result in dispersion of airborne contaminants into the work area.

Rain, Wet Weather, and High Humidity

Wet conditions resulting from rain and wet weather increase slipping and tripping hazards, braking distances of vehicles, the potential for vehicle skidding, or difficulties in handling powered devices such as augers and drills. Rain fills holes, obscures trip and fall hazards, and increases risk of electrical shock

when working with electrical equipment. Changes in soil conditions caused by rain can impact trenching and excavating activities, creating the potential for quicksand formation, wall collapse, and cave-in. Vehicles become stuck in mud, and tools and personnel can slip on wet surfaces. Rain and wet conditions may decrease visibility (especially for personnel wearing respiratory protection) and limit the effectiveness of certain direct-reading instruments (e.g., photoionization detectors [PIDs]).

Feet that become wet and are allowed to remain wet can lead to serious problems under both heat and cold conditions. Activities that may result in wet feet include extended work in chemical protective clothing and wading in water/liquid during biological assessments. Trench foot, paddy foot, and immersion foot are terms associated with foot ailments resulting from feet being wet for long periods of time. All have similar symptoms and effects. Initial symptoms include edema (swelling), tingling, itching, and severe pain. These may be followed by more severe symptoms including blistering, death of skin tissue, and ulceration. (NOTE: The following Preventive and Protective Measures also apply to Cold, Snow, and Ice.)

Preventive and Protective Measures

Walkways, stairs, ladders, elevated workplaces, and scaffold platforms must be kept free of mud, ice, and snow. Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

Vehicles used in rain or cold weather must have working windshield wipers and defrosters, and windows must be kept clear of obstruction.

Drivers must observe traffic laws, including maintaining speed within limits safe for weather conditions, and wearing seat belts at all times. Note that this may mean operating below the posted speed limit.

When walking, workers should use a walking stick or probe to test footing ahead where there is standing water, snow, or ice to protect the walker against stepping into potholes or onto puncture hazards, buried containers, or other potential structurally unsound surfaces.

Prior to using vehicles or equipment in off-road work, workers should walk the work area or intended travelway when puddles or snow may obscure potholes, puncture hazards, or buried containers, or other potential structurally unsound surfaces.

Project managers should arrange to have winches, come-alongs, or other mechanical assistance available when vehicles are used in areas where there is increased risk of getting stuck. Cable or rope and mechanical equipment used for pulling stuck vehicles must be designed for the purpose, of sufficient capacity for the load, and be inspected regularly and before use to ensure safety. **Manually pushing stuck vehicles is to be avoided.**

Prevention methods are required when work is performed in wet conditions or when conditions result in sweating, causing the feet to become and remain wet. Proper hygiene is critical. Workers must dry their feet and change socks regularly to avoid conditions associated with wet feet. Use of foot talc or powder can additionally assist in prevention of this type of condition.

Cold, Snow, and Ice

Cold weather affects vehicle operation by increasing difficulty in starting and braking. Ice, frost, and snow can accumulate on windows and reduce vision. Cold, wet weather can cause icing of roadways,

driveways, parking areas, general work places, ladders, stairs, and platforms. Ice is not always as obvious to see as snow or rain, and requires special attention, especially when driving or walking.

Snow and ice increase the risk of accidents such as slipping when walking, climbing steps and ladders, or working at elevation, and the risk of accidents when driving vehicles or operating heavy equipment. Heavy snow and ice storms may cause electric lines to sag or break, and the use of electrical equipment in snow increases the risk of electric shock. Snow can hide potholes and mud, which can result in vehicles getting stuck or persons falling when stepping into hidden holes. Snow also may cover water, drums or other containers, sharp metal objects, debris, or other objects that can cause falls or punctures.

Preventive and Protective Measures

WESTON personnel are cautioned against operating motor vehicles such as cars or trucks on ice under any circumstances. If traveling in icy conditions, WESTON personnel should follow all public service advisories that curtail driving activities.

Personnel performing activities that require working over ice should be aware of minimal ice thickness safety guidelines as follows:

- 4-inch minimum: activities such as walking or skating.
- 6-inch minimum: activities such as snowmobiling or the use of equipment with the same weight and cross-sectional area as a snowmobile.

Personnel should always be aware that these measurement guidelines are under ideal conditions and that snow cover, conditions on rivers, ponds, or lakes with active currents, and other environmental factors impact the safety of working on ice. Clear ice typically is the strongest, while ice that appears cloudy or honeycombed (contains entrained air) is not as structurally strong. Measurements made by drilling or cutting through the ice should be made every few feet to verify safe conditions. Provisions for rescue (e.g., ladders or long poles and effective communications) must be available at the work site.

Lightning

Lightning represents a hazard of electrical shock that is increased when working in flat open spaces, elevated work places, or near tall structures or equipment such as stacks, radio towers, and drill rigs. Lightning has caused chemical storage tank fires and grass or forest fires. Static charges associated with nearby electrical storms can increase risk of fire or explosion when working around flammable materials, and can adversely affect monitoring instruments.

Lightning is the most dangerous and frequently encountered weather hazard people experience each year. Lightning affects all regions. **Florida, Michigan, Pennsylvania, North Carolina, New York, Ohio, Texas, Tennessee, Georgia, and Colorado** have the most lightning deaths and injuries.

Preventive and Protective Measures

Prior to working in areas or beginning projects when or where there is an increased potential for lightning striking personnel, steps must be taken to predict the occurrence of lightning strikes. Recommendations include:

- Check with client management to determine if there are any patterns or noted conditions that can help predict lightning or if there are structures that are prone to lightning strikes. Arrange for

client notification when there is increased potential for lightning activities. Ensure that clients include WESTON workers in lightning contingency plans.

- Monitor weather reports.
- Note weather changes and conditions that produce lightning.
- Stop work in open areas, around drill rigs or other structures that may attract lightning, on or in water and in elevated work places when lightning strikes are sighted or thunder is heard near a work site.
- Ensure all personnel are provided with safe areas of refuge. Prevent personnel from standing in open areas, under lone trees, or under drill rigs.
- Observe the "30-30" Rule. If you see lightning and thunder is heard within 30 seconds (approximately 6 miles), seek shelter. If you hear thunder, but did not see the lightning, you can assume that lightning is within 6 miles and you should seek shelter. Remain in the sheltered location for 30 minutes following the last lightning strike.
- Use a hand held static potential meter (lightning detection device) to monitor the potential difference between a cloud and the ground. When the measured potential is greater than 2 kV/m, there is a potential for a lightning strike – seek shelter.

High Wind and Tornado Safety

High Winds

Many construction workers have died due to wind-related accidents and injuries. A ladder that seems secure under normal circumstances can become unstable during windy conditions and cause you to fall. Scaffolding that is improperly secured can rip free during strong winds and kill bystanders. The risk of injury for construction workers increases during strong winds. Keep in mind that changing weather conditions can affect your daily work tasks, and make sure you have a game plan to prevent proper damage and personal injury.

Stay Informed: With today's modern technology available at the touch of a button, you should keep up to date with the latest local weather reports. Visit weatherbug.com or weather.gov to stay informed in case of wind warnings, watches, and advisories. Larger projects may have their own weather station on site to provide instant weather data. Use daily hazard assessments to determine if working conditions have changed or will change throughout the day.

Be Prepared: When you know the weather will be windy, secure loose building materials, scaffolding and fencing that could be picked up or torn loose by strong winds and thrown onto surrounding streets, structures, vehicles, or bystanders.

Know the Limits of Your Equipment: When operating any equipment, take time to read the operator's manual and become familiar with the wind specifications. Many crane manufacturers have high-wind guidelines to prevent you from operating a crane in unsafe weather. You should also check safety equipment such as fall protection to determine if it is adequate for windy conditions.

Know the Terminology

Severe Thunderstorm Watch

A Severe Thunderstorm Watch means that strong thunderstorms capable of producing winds of 58 mph or higher and/or hail 3/4 inches in diameter or larger are possible. If you are in the area of a Severe Thunderstorm Watch, you should be prepared to take shelter from thunderstorms. Severe Thunderstorm Watches are generally issued for 6-hour periods.

Severe Thunderstorm Warning

A Severe Thunderstorm Warning means that thunderstorms capable of strong winds and/or large hail are occurring or could form at any time. If you are in the area of a severe thunderstorm, you should take shelter indoors immediately, avoid windows, and be prepared for high winds and hail. Severe Thunderstorm Warnings are generally in effect for an hour or less.

High Wind Watch

A High Wind Watch is issued when sustained winds exceeding 40 mph and/or frequent gusts over 60 mph are likely to develop in the next 24 to 48 hours. For summit areas, high wind watches are issued when sustained winds are expected to exceed 45 mph and/or frequently gust over 60 mph. If you are in an area for which a High Wind Watch has been issued you should secure loose objects outdoors that may blow about and avoid outdoor activity that exposes you to high winds.

High Wind Warning

A High Wind Warning is issued when sustained winds exceeding 40 mph and/or frequent gusts over 60 mph are occurring or imminent. For summit areas, warnings are issued for winds exceeding 45 mph and/or frequently gusting over 60 mph. Wind warnings may be issued up to 24 hours ahead of the onset of high winds and remain in effect for 6 to 12 hours. If you are in an area where a high wind warning is in effect you should avoid activities that expose you to high winds. Loose objects may be blown around. Tree limbs may break and fall. Power lines may be blown down.

Wind Advisory

A Wind Advisory is issued when sustained winds of 30 to 39 mph and/or frequent gusts to 50 mph or greater are occurring or imminent. Wind advisories may be in effect for 6 to 12 hours. If you are in an area where a wind advisory is in effect you should secure loose objects that may be blown about outdoors and limit activity that may expose you to high winds.

Work Safely: If you will be working on a windy day, you should be alert and protected. Wear eye protection to prevent dust and other particles from entering or striking your eyes. Keep your hard hat on at all times to prevent injuries from falling or flying objects. The likelihood of falls from heights is greatly increased by strong winds. Wear the necessary PPE to ensure your safety.

To avoid flying debris and to minimize damage during high winds:

- Shut down outdoor activities involving work at elevation on ladders, scaffolding, aerial lifts, etc.; handling large tarps and plastic sheeting when wind speeds exceed 25 mph; including work with radioactive materials and highly toxic materials that could be dispersed by the winds.
- At 13 - 18 mph wind will raise dust. Follow the dust action level.

- Move mobile items stored outside to indoor storage.
- Secure any items that cannot be moved inside.
- Be careful opening exterior doors.
- Be cautious about downed power lines, tree limbs, and debris on roads.
- Be alert for animals who have escaped from farms and zoos.

Stay Away from Power Lines: High winds can cause tree limbs to fall on power lines resulting in electrocution hazards or loss of power. Your best bet is to keep your distance.

Tornados

What is a TORNADO?

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or as a result of severe weather associated with hurricanes. A funnel cloud is formed as cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado results from high wind velocity and wind blown debris.

Tornado Safety

When a tornado approaches, you have only a brief amount of time to make life-or-death decisions. Advance planning and quick response are the keys to surviving a tornado.

Purchase a NOAA Weather Alert radio with an alert feature. When tuned to the proper frequency, these weather radios remain silent until a weather emergency occurs. Once they pick up the alarm tone, they will begin broadcasting emergency weather information so that citizens can protect themselves and their property. Some models of the NOAA weather radio incorporate the Specific Area Message Encoder technology, allowing users to target only those warnings that affect their immediate geographic area.

Conduct tornado drills. Designate an area to serve as your safe area, and practice having team members assemble there in response to a mock tornado warning.

Emergency Communications Plan. Develop an emergency communications plan in case team members are separated from one another when a tornado warning goes into effect. Designate an emergency coordinator. Instruct everyone to contact this coordinator in a weather emergency for instructions on what to do during the storm and where to reassemble after the emergency has passed. Design contingency plans to be consistent with client contingency plans. When possible use client warning and alerting systems and confirm that team members have access to shelters and know how to get to them.

Know the Difference between a Tornado Watch and a Tornado Warning

Tornado Watch: Issued by the National Weather Service when tornadoes are possible in your area. You should remain alert for approaching storms. Remind family members of where the safe areas are within your home, and carefully monitor radio or television reports for further developments.

Tornado Warning: Indicates that a tornado has been sighted in your area, or is indicated on weather radar. You should proceed to safe shelter immediately.

When A Tornado Warning Goes In Effect, Put Your Safety Plans In Action.

In Your Automobile: Motor vehicles are easily overturned by tornado winds. Leave your vehicle and seek shelter in a sturdy building. As a last resort, seek shelter in a ditch or culvert. Do not try to outrun or outmaneuver a tornado! Use the time to seek appropriate shelter outside your vehicle.

Office Buildings, Hotels, and Shopping Centers: Take shelter in an interior hallway on a lower floor. A closet, bathroom or other small room with short, stout walls will give some protection from collapse and flying debris. Otherwise, get under heavy furniture and stay away from windows. Many tornado deaths have occurred in large buildings due to the collapse of a roof or wide span wall. A corner area, away from a window, is safer than the middle of a wide span wall.

Out In Open Country: When severe weather approaches, seek inside shelter immediately. The chances of encountering falling trees, downed power lines and lightning are far greater than encountering a tornado itself. If a tornado approaches, lie flat in the nearest depression, such as a culvert or ditch, and cover your head with your arms.

**BE ALERT TO CHANGING WEATHER CONDITIONS
HAVE AN EMERGENCY WEATHER PLAN IN PLACE
REHEARSE YOUR CONTINGENCY PLANS PERIODICALLY
KNOW WHERE TO GO WHEN A TORNADO THREATENS.**

FLD 26 LADDERS

REFERENCES

ANSI A-14.1, A-14.2, A-14.3
29 CFR 1910.25, 1910.16, 1910.27

RELATED FLDs

FLD 25 – Working at Elevation/Fall Protection

Portable Ladders

Portable ladders must be used for their designed purpose only. Portable ladders must be used, maintained, and constructed according to American National Standards Institute (ANSI) Standards A-14.1 and A-14.2, Occupational Safety and Health Administration (OSHA) 29 CFR 1910.25 and .26 and manufacturer's instructions.

Inspection

Portable ladders must be examined for defects prior to use. Examination shall include, but not be limited to, ensuring that:

1. Joints between steps or rungs are tight.
2. Hardware and fittings are secure, and rivets are not sheared.
3. Metal bearings (e.g., locks, wheels, pulleys) are lubricated.
4. Rope on extension ladders is in good condition.
5. Rungs are not loose, cracked, bent, or dented; are free of splinters or splinters; and are treated to prevent slipping.
6. Side rails are not cracked, bent, or dented and are free of splinters.

Note: defective ladders must not be used. Ladders found to be defective should be clearly tagged to indicate NO USE, if repairable, or destroyed immediately if repair is not possible.

Use Requirements

Ladders must be set on a flat, firm surface with both handrails in contact with an upper support which is sufficiently strong and rigid.

Straight ladders must have secure footing provided by a combination of safety feet, top of ladder tie-offs and mud sills, or a person holding the ladder to prevent slipping.

When middle or top sections of sectional ladders are used as bottom sections, they must have safety feet.

The ratio of the distance to the foot of a ladder from the base of the vertical plane to the height from the base to the top of the vertical plane when the ladder rests on the top of the vertical plane shall be no more than 1:4 and no less than 1:3 (e.g., 1 foot out from a wall for every 4 feet up the wall to the point where the ladder rests against the wall).

The handrails of a straight ladder must extend at least 36 inches above the landing.

Straight ladders may not be lashed together to make sectional ladders.

Metal ladders must not be used near electrical conductors.

Workers must use both hands, and must face the ladder when ascending and descending.

No more than one person may use a straight portable ladder at a time.

Standing on the top rung/step or above the manufacturer's safe indication is prohibited.

Ladders should be positioned so workers do not have to lean more than half of their body beyond (outside of) either handrail.

Ladders must not be placed in front of doors that open toward the ladder unless the door is locked and the person(s) using the ladder has the key, the door is blocked open and other persons are warned of the presence of the ladder, or a guard is posted at the door.

Ladders must be inspected after each use and if acceptable, stored in a manner not to damage or stress the ladder. Ideally, ladders should be hung from a side rail in an area where sunlight or extremes in temperature or humidity will not affect them.

Ladders must never be used as scaffolding, storage racks, or shelves. Requirements for construction of portable ladders include:

- Ladders must conform to construction criteria of ANSI Standards A-14.1 and A-14.2.
- Ladders must have at least 12 inches between side rails and should have 12 inches between rungs.
- Ladder length must not exceed 30 feet for single section ladders, 48 feet for two-section ladders, and 60 feet for ladders with more than two sections. The minimum overlap for extension ladders must be 36 inches for up to 36 feet, 48 inches for 36 to 48 feet, and 60 inches for up to 60 feet. There must be positive stops to ensure proper overlap.
- Metal ladders must be of sufficient strength and corrosion resistant.
- Steps or rungs of metal ladders must be treated to prevent slipping.

Fixed Ladders

Fixed ladders shall be constructed and used in accordance with OSHA Standards, 29 CFR 1910.27, and ANSI Standard A-14.3.

Requirements for Construction

Loading Requirements: A minimum live load capacity of 200 lb. is concentrated at the points of maximum stress. Capacity must be increased in 200-lb increments for each additional person, based on the rate of use and potential for more than one person using a ladder or ladder section at the same time.

Weight of the ladder itself and appurtenances must be considered in designing the railings and fastenings.

Wooden ladders must meet design stress requirements of 29 CFR 1910.25.

Feature Requirements: Metal rungs must be a minimum of 3/4-inch in diameter, except where corrosive atmospheres exist. In corrosive atmospheres, metal rungs must be 1-inch minimum diameter or coated to

prevent corrosion. Wooden rungs must be a minimum of 1 inch in diameter. The distance between rungs, cleats, or steps must be no more than 12 inches. Rungs, cleats, or steps must be uniformly spaced throughout the length of the ladder.

The minimum clear width of rungs, cleats, or steps is 16 inches.

Rungs, cleats or steps, and side rails that may be used for handholds when climbing, must offer adequate gripping surface and be free of splinters, splinters or burrs, and substances that could cause slipping.

Ladders constructed of different metals, which could result in electrolytic action, must incorporate electrolytic protection. Ladders in atmospheres that could affect the integrity of the ladder must be treated to prevent corrosion or deterioration.

Fixed ladders (unless of sufficient height to use caging or a well construction as fall protection) must have as a minimum:

- 15 inches of clearance from the centerline of the rungs to each side.
- 30 to 36 inches from the rungs to any obstruction on the climbing side of the ladder.
- 7 inches between the rungs and any obstruction on the non-climbing side of the ladder.
- grab rails or extensions of side rails reaching a minimum of 40 inches above the landing.
- be oriented so that it is not necessary to step across more than 12 inches to a point of landing through or to the side of the ladder.

Ladders of greater than 20 feet must have cages or other approved fall protection devices. Where cages or wells are used for fall protection, the cage must begin no lower than 7 feet from the "ground" landing, but no higher than 8 feet. Ladders of more than 30 feet must have sections offset with side-accessed landings (minimum dimensions 24 inches wide by 30 inches long) located at least 4 feet below the top of a 30-foot section (or fraction thereof). The distance from the rungs to the cage back on the climbing side must be between 27 and 28 inches, and the width of the cage or well no less than 27 inches. There should be no projections through the cage. Projections in wells may reduce space from rung to projection to no less than 24 inches, and projections must have deflectors for head protection.

Where fall protection is provided by ladder safety systems (body belts or harnesses, lanyards, and braking devices with safety lines or rails), systems must meet the requirements of and be used in accordance with FLD 25 and be compatible with construction of the ladder system.